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AUTHOR Blanchard, Pamela Snyder
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ABSTRACT

A study compared the benefits of phonological awareness instruction along with and without a phonics computer software program to improve phonological and reading skills in elementary students with mild mental disabilities. During the eight weeks of the study in the fall of 1999, elementary resource students were taught phonological awareness skills using intensive instruction in the "Herman Method for Reversing Reading Failure," the "Phonological Awareness Book," and other reading activities. The 31 students in the study were randomly divided into control and treatment groups. After the core reading activity, while the treatment group used the Davidson Company "Phonics" computer software program, the control group did a different supplemental reading activity with other computer software programs, reading/language games, worksheets, or free reading. Two tests were used as the pretests and posttests for the study. All scores were averaged together for the final pretest and posttest scores. The statistical analysis for this study focused on the mean scores of the posttests of the two groups (control and treatment) at the end of the study. Results indicated no statistical significance between the posttest scores of the treatment group using the Davidson "Phonics" computer software program and those for the control group that used other supplemental reading activities. Both groups did equally well in progressing in reading skills during this study. This may be a positive endorsement for the "Phonics" software because these students did equally well as students receiving closer teacher supervision during supplemental activities. Findings suggest the phonological awareness instruction definitely benefited all the students even though the computer software appeared to provide no additional benefit in comparison to other supplemental activities. (Contains 56 references, and 3 tables and 2 figures of data. Appendixes contain permission letters.) (RS)

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PHONOLOGICAL AWARENESS INSTRUCTION TO PREVENT READING FAILURE

A Study of the Benefits of Commercially Produced Phonics Software to Phonological Awareness Instruction

ED 441 228

A Research Project
Presented to
the Department of Teacher Education
of Johnson Bible College

In Partial Fulfillment
of the Requirement for the Degree
Master of Arts in
Educational Technology and Bible

by
Pamela Snyder Blanchard
April 2000

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APPROVAL PAGE

This action research project by Pamela Snyder Blanchard is accepted in its present form by the Department of Teacher Education at Johnson Bible College as satisfying the action research project requirements for the degree Master of Arts in Educational Technology and Bible.

Chairperson, Examining Committee

Member, Examining Committee

Member, Examining Committee

Member, Examining Committee

May 5, 2000
Date

ABSTRACT

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The focus of this study was to compare the benefits of phonological awareness instruction along with and without a phonics computer software program to improve phonological and reading skills in elementary students with mild mental disabilities.

During the eight weeks of the study in the fall of 1999, elementary Resource students were taught phonological awareness skills using intensive instruction in the Herman Method for Reversing Reading Failure, the Phonological Awareness Book and other reading activities. The Herman Method is a scripted program that the teacher follows the same way every time the lesson is taught.

Students in the study were randomly divided into two groups, the control group and the treatment group. After the core reading activity, while the treatment group used the Davidson Company Phonics computer software program, the control group did a different supplemental reading activity with other computer software programs, reading/language games, worksheets, or free reading. The study used a small population of thirty-one students, which may not yield statistically significant results. The control group had fifteen students and the treatment group had sixteen students. These students had widely varying abilities and came from several different grade levels (grade 2-5, ages 7-11). They represented a wide range of diagnosed disabilities from learning disabled and/or language impaired to autistic or mentally retarded. The two groups were evenly divided by grade level, disability, and sex (five girls and ten or eleven boys in each group) as much as possible.

Two tests were used as the pretests and posttests for the study. Nine "Word Analysis" subtests from the Brigance® Diagnostic Comprehensive Inventory of Basic Skills measured improvement in identifying, pronouncing, and substituting initial and final

consonants, substituting short and long vowel sounds, and pronouncing and substituting written initial blends and digraphs. The Yopp-Singer Test of Phoneme Segmentation, in which the student breaks each word said to him by the teacher apart into its individual, discrete sounds, was the second assessment used in the study. All scores were averaged together for the final pretest and posttest scores.

The statistical analysis for this study focused on the mean scores of the posttests of the two groups (control and treatment) at the end of the study. These posttests were used to measure improvement in each student and averaged together to obtain a group score for each group.

This study showed no statistical significance between the posttest scores of the treatment group using the Davidson Phonics computer software program and those for the control group that used other supplemental reading activities. Both groups did equally well in progressing in reading skills during this study. This may be a positive endorsement for the Phonics software at any rate because these students did equally well as students receiving closer teacher supervision during supplemental activities. Either the Phonics software and other supplemental activities had an equal influence or they had little influence on the basic reading instruction that was given to all students and probably provided the major benefits shown in the results of the study. All students in the study showed a statistically highly significant average of about a fifty point improvement in 222 test items from pretest to posttest in the skills taught in the study, no matter which group they were in. Therefore the phonological awareness instruction definitely benefited all the students even though the computer software appeared to provide no additional benefit in comparison to other supplemental activities.

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Chapter 1

INTRODUCTION

Justification for the Study

Teachers in the classroom are often confused about what is best practice in the classroom because of conflicting reports and the lag time between research and implementation into curriculum policies. Research in the field of reading instruction in the past decade has intensified in the support of the theory that phonological awareness, beginning with phonemic awareness, is vitally necessary for the acquisition of beginning reading achievement (Troia, 1999, p.28). Some children do not learn this naturally and must be explicitly taught, the sooner the better. Studies have demonstrated that "phonemic awareness abilities in kindergarten (or in that age range) appear to be the best single indicator of successful reading acquisition" (Cunningham, et al, 1999, p. 2). Stanovich states that phonological awareness tasks "are the best predictors of the ease of early reading acquisition - better than anything else that we know of, including IQ" (Stanovich, 1994, p. 284). This information, along with the reading programs and materials to support it, needs to be in the hands of every preschool and elementary school (especially grades K-3) regular and Special Education teacher. Research strongly supports the theory that teaching phonemic awareness in context in preschool through grade two can prevent many reading problems that children experience. Teachers like to know that research is backed up in actual performance in field tests in classrooms. This study used an intensive program of phonemic awareness activities with and without computer software to investigate the benefits of such a program in an elementary school Resource classroom in East Tennessee.

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Significance of the Problem

The National Institute of Child Health and Human Development estimates 17 to 20% of all American children have serious reading difficulties (Lyon, 1997, p. 3). It is estimated that 20 to 25% of all students do not develop the phonological awareness skills needed for reading on their own without explicit training (Robertson & Salter, 1997, p.5). Due to better assessment instruments and knowledge of the problem, early identification (which is necessary for early intervention) during the preschool years and in kindergarten of students at risk for reading failure is now possible. The Yopp-Singer Test of Phoneme Segmentation is one such test with high reliability and validity that is easy to administer, score, and interpret (Yopp, 1995, p. 21). Most experts in the field of reading instruction now agree that early intervention is crucial, as students who are not reading by third grade will most likely experience lifelong reading difficulties (Lyon, 1997, p.3). Research has shown that those children at risk for academic failure who are not reached with early interventions are more likely than their peers to drop out of school, be delinquent, be out of work and either in prison or on welfare as adults, whereas early intervention significantly cuts down on these problems. Eleven percent of the young adult population from ages 16-24 were high school dropouts in 1997 (NCES, 1997).

Children with learning disabilities served by Federally supported programs rose from 1.8% of the student population in the United States in 1976-77 to 5.75% of the student population in the United States in 1995-96, according to the National Center for Education Statistics. The number of children served in Federal Special Education programs rose an alarming 47 percent between 1977 and 1995 (NCES, 1997).

Statement of the Problem

Historically, most Resource pull-out and other remedial reading programs have not met with great success (Spiegel, 1995). Once students qualify for services as learning disabled, they rarely get out of Special Education programs. Although they may make good progress, it is usually not enough to bring them up to their expected grade levels in reading skills. Students receiving Resource services are a special group who typically have much more difficulty learning and progressing educationally due to their diagnosed disabilities and deficits than regular education students. These students require instruction that is more intensive, relentless, precise, structured, direct, engaging, motivational and carefully monitored in order to overcome their frustrations with learning to succeed in a classroom setting. There is a delay in the time that research indicates the benefits and successes of different reading programs and the actual implementation of these programs into the classroom. Although there are proven benefits to bringing technology into the classroom, most teachers do not have the funds or training to take full advantage of the educational technology available. The software and assessment tools they need to integrate with the reading programs they are using may be nonexistent, too difficult to find, or financially unfeasible in public schools that are poorly funded.

Definition of Terms

Phoneme Awareness is an understanding of the individual, discrete sounds or phonemes, the smallest functional units, in spoken language and an ability to work with them as individual sounds within words (Cunningham et al, 1999, p 2). "There are 44 phonemes in the English language, including letter combinations such as /th/" (Behrman, 1995, p. 1).

Phonological Awareness is the knowledge of the meaningful sounds, or phonemes, in the English language and the ability to manipulate those sounds by breaking apart or segmenting them and blending them together to form syllables, words, phrases and sentences (Robertson, 1997, p. 5).

Phonics is a knowledge of sound-symbol relations (naming written letters or the sounds of written letters or graphemes) (Cunningham et al, 1999, p. 2).

Learning Disability Although the definition and even the concept of learning disabilities is controversial, final regulations in 1999 for the Individuals with Disabilities Education Act (IDEA) define a learning disability as a "disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia" (Federal Register, 1999, p. 12422).

Speech or Language Impairment means "a communication disorder, such as stuttering, impaired articulation, a language impairment, or a voice impairment, that adversely affects a child's educational performance" (Federal Register, 1999, p. 12422).

Mental Retardation means "significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child's educational performance" (Federal Register, 1999, p. 12422).

Developmental Delays affect children with "delays, as measured by appropriate diagnostic instruments and procedures, in one or more or the following areas: physical

development, cognitive development, communication development, social or emotional development or adaptive development; and who, by reason thereof, needs special education and related services" (Federal Register, 1999, p. 12421).

Limitations

The students in the study included all students receiving phonological awareness training in the Resource classroom in an East Tennessee elementary school.

The group was not a random sample but instead was all children identified as eligible for Special Education services in Resource who were being taught with the Herman Method for teaching reading or another phonological awareness training method used in this school classroom. Therefore it was a small population of 31 students which may not yield statistically significant results.

The control group had fifteen students and the treatment group had 16 students. These students had widely varying abilities and came from several different grade levels (grade 2-5, ages 7-11). They represented a wide range of diagnosed disabilities from learning disabled and/or language impaired to autistic or mentally retarded.

Although every attempt was made to ensure that the control and treatment groups each represented a fairly equal range of academic ability and performance levels, it is possible that the groups were not equally divided as far as ability to improve in phonological awareness skills.

The researcher was the teacher working in the classroom with the subjects of the study. She was the one who randomly divided the children into groups and she knew which group each student was in.

The study was short in duration, for 8 weeks only.

Assumptions

Adequate control over the subjects, test administrations, instruction and treatments by the teacher/researcher was assumed.

Typical classroom routines with Resource students who speak English as their primary language and who were intellectually able to learn phonemic awareness skills was assumed.

It was assumed that students participating in the study had adequate uncorrected hearing or vision or that it had been corrected within normal limits.

It was assumed that the researcher taught the research content in the same manner to both the control and the treatment groups since the groups were intermixed during the instruction with the Herman Method, which is a scripted program that the teacher follows the same way for each lesson. While the treatment group used the Davidson Phonics software program, the control group was participating in a different supplemental reading activity with other computer software programs, reading/language games, worksheets, or free reading.

It was assumed that the two groups were evenly divided as far as academic ability and performance levels, as much as was possible.

Every effort was made to make the learning environment as beneficial as possible for each group as far as time of day teaching and minimizing outside distractions.

Null Hypothesis

The following hypothesis was tested using the Brigance Diagnostic Comprehensive Inventory of Basic Skills and the Yopp-Singer Test of Phoneme Segmentation.

Students receiving instruction with the Herman Method for Reversing

Reading Failure and the Phonological Awareness Book activities combined with Davidson Company Phonics computer software will have no significant increase (at the .05 level of significance) in word analysis and phoneme segmentation skills over students receiving instruction only with the Herman Method and the Phonological Awareness Book activities.

Chapter 2

REVIEW OF RELATED LITERATURE

Phonological Awareness

Substantial converging evidence in the field of reading research supports the theory that beginning readers must have phonological awareness skills in order to experience success in reading (Cunningham, 1999, Juel & Meier, 1999, Allen, 1998). This applies to all beginning readers, but is especially crucial to students with reading disabilities as well as students at risk for reading difficulties or failure due to environmental, socioeconomic, ethnic or biological factors (Houle, 1997, Lyon, 1997).

Language and Learning Disabilities

Most language-learning disabled students have difficulty with phonological awareness and may benefit from explicit training in phonemic awareness (segmenting and blending individual sounds), word recognition and comprehension strategies within a meaningful text environment (Santa, 1999, Houle, 1997, Frost, 1995, Lyon, 1995, Behrman, 1995, Adams, 1990). Children with dyslexia (the most prevalent form of learning disability) with phonological core deficits make significantly less progress in basic word reading skills compared to peers in their same age groups with equivalent IQs (Frost & Emery, 1995). According to research, children between ages 9 and 19 with dyslexia who have phonological deficits improve slightly more than one grade level in reading, while other children with learning disabilities in the same classroom improve about six grade levels (Frost & Emery, 1995). It is not clearly understood why this problem exists but processing and memory in some children with dyslexia and learning disabilities may contribute to their reading difficulties (Frost & Emory, 1995).

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Interventions to Prevent Reading Failure

Much recent research supports the theory that the most effective reading instruction uses a balanced approach of explicit teaching of phonemic awareness and direct and integrated instruction in the reading of authentic, rich and meaningful text with reading comprehension strategies (Juel & Meier, 1999, Allen, 1998, McFadden, 1998, Sensenbaugh, 1996, Adams, 1990).

Early intervention for children at risk of reading failure is crucial according to the latest research (Santa & Hoien, 1999, Troia, 1998, Fazio, 1997). Two studies conducted to research the effects of phonological awareness interventions in children with language learning difficulties found that instruction in syllable, phoneme, and word segmentation, sound blending, and rhyme detection significantly improved reading performance in the treatment group in comparison to the control group (Fazio, p. 10). Preschool children can be taught phonemic awareness skills that will better prepare them for beginning reading when they reach school (Santa & Hoien, 1999). Many preschool and even kindergarten children do not associate the sounds of language with print. Spoken language does not emphasize the individual sounds or phonemes within words and stretching out those sounds is unnatural. In a study of a program to compare the effects to reading progress of interventions teaching phonological processing skills to a treatment and a control group of kindergarten students, paired t-tests indicated significance for pre- to post-test gains on all six reading measures in the treatment group versus significant test gains only in one measure (fingerpointing text reading) in the control group (Vandervelden, p. 75). In a beginning reading program that focused on phonemic analysis training designed by Wallach and Wallach, low-readiness first-graders tutored on a one-to-one basis performed significantly better than the control group on several reading measures, including report card grades and

standardized tests (Williams, p. 242).

Reading Programs

The Herman Reading Method for Reversing Reading Failure is a systematic, skill-sequenced, multisensory, intensive, direct instruction remedial reading program especially designed for children in grades 3 and up with average intelligence who have thus far experienced reading failure. It is used in some Special Education classrooms in the school system of this study by teachers who chose to take the training and materials offered by the Special Education Department of the local school system. Both the teacher and the teacher assistant received 3 days of training in teaching with the Herman Reading Method during the winter of 1998. The instruction is scripted so that it is most effective and the same for different groups of students.

The Integrated Strategies Approach is a balanced reading program wherein children receive "direct instruction in word identification skills along with the opportunity to read quality children's literature" (Allen, 1998, p. 254). In the Integrated Strategies Approach, core words and key words are chosen by the teacher from authentic, meaning-rich literature in the classroom curriculum to build word decoding skills, with connected spelling and writing activities to increase phonological awareness. "Word identification instruction is embedded within the context of real reading and writing activities"(Allen, p. 7). In research to study the effectiveness of the ISA program, 70% of children in second and third grade who were at Primer level or below in September could read grade level materials by May with ISA tutoring (Allen, p. 8).

Phonological Awareness Activities (Academic Curriculum Associates, 1998, Peterson, 1999 Robertson & Salter, 1995, 1997, & Torgeson, 1994) are designed to supplement regular comprehensive classroom instruction "to enable students to solve the

phoneme/grapheme code of the English language, resulting in improved word attack and spelling skills" (Robertson & Salter, 1997).

Reading Recovery is an early intervention reading instruction program developed by Marie Clay in New Zealand that incorporates one-to-one tutoring with close collaboration between teacher and child to develop decoding and comprehension strategies appropriate to the child's needs, reading and rereading whole short books at the child's ability level, daily sentence writing, and phonemic awareness training incorporated into the program for children to have "many opportunities to use letters and sounds in a purposeful, metacognitive manner" (Spiegel, 1995, p.5). Results of Reading Recovery interventions are impressive, that "well over three fourths of children identified as being in the lowest 20% of their peer group in emerging literacy left Reading Recovery performing within the average range in their classrooms" according to published research in 1988 and 1991 sponsored by Ohio State University, the U. S. National Diffusion Network site (Spiegel, p. 2).

The word box is a rectangle divided into sections to represent each sound in a word. It is used to help students become aware of the spoken sounds in words using a counter to represent each sound in a box and then to match sounds to print using a magnetic letter to represent each sound in a box. In a study by Joseph (Dec 1998/Jan 1999), she found that:

> the word boxes approach was successful in helping children maintain performance levels in identifying and spelling basic words because the supportive structure of the divided boxes first helps children conceptualize each phoneme as a sound segment and later encourages the blending of sounds to make a whole word.

Assessments

One assessment used for this study was The Brigance ® Diagnostic Comprehensive Inventory of Basic Skills(CIBS) -Reading, a criterion-referenced individually administered test that is capable of tracking a student's mastery of developmental and academic skills over

time from pre-kindergarten to grade 9. The purpose of the Brigance is to assess mastery of skills and to identify areas of need so the test assessor determines validity by choosing to test only those items deemed appropriate for the individual needs of each student. The test was field-tested and critiqued by hundreds of professionals from 27 states plus Canada (Brigance, Appendix A). When compared with the Wide Range Achievement Test®, "the Brigance ® Word Recognition is as valid as the WRAT for measuring reading skills" (Krawiec, p. 230). Test-retest reliability correlation coefficients for both the Word Recognition and Oral Reading subtests is .89 (Linkous, et al, 1986, p. 7). "The alternate forms reliability coefficients compared favorably with the reference value of .88" (Linkous, et al, 1986, p. 10). It has thus been concluded that the reliability of the CIBS is acceptable (Linkous, et al, 1986, p. 1). The Brigance has face validity due to its wide acceptance and use as a "teacher's choice" test in the classroom (Linkous, et al, p. 2).

Another assessment used in this study to determine student levels of achievement in phonemic awareness was the Yopp-Singer Test of Phoneme Segmentation, published in The Reading Teacher (September 1995). It has a "reliability score (Cronbach's alpha) of .95, indicating that it can be appropriately used in the assessment of individuals" (Yopp, 1995, p. 23). Seven years of longitudinal data and comparison with performance on the Comprehensive Test of Basic Skills (CTBS, 1973) were analyzed to indicate that the Yopp-Singer Test is also a valid measure of phonemic awareness with construct and predictive validity (Yopp, 1995, p.23-24). When ten tests of phonemic awareness were compared, the Yopp-Singer Test of Phoneme Segmentation "may be the best test of Simple Awareness represented by the sample of tests used in this study, perhaps because there was an explicit rationale underlying its development" (Yopp, 1988, p. 173).

Other assessments for phonemic and phonological awareness are reviewed in

articles by Frost & Emery (1995), van Kleeck, Gillam & McFadden (1998), Vandervelden & Siegel (1997) and Troia, Roth & Graham (1998).

Chapter 3

METHODS AND PROCEDURES

Experimental Subjects

Students in the study were from the Resource class at an elementary school in East Tennessee. The students came from lower to middle socioeconomic groups and were assumed to be typical representatives of the students who qualify for Resource and/or Speech/ Language services in East Tennessee. There were 10 girls and 21 boys for a total of 31 children. The students were ages 6 to 11 in grades 2-5 with these diagnosed handicapping conditions: learning disabled, speech/language impaired, autistic, mentally retarded or developmentally delayed. The researcher for this study was the Resource Specialist (classroom teacher certified in Special Education/case manager) for the Resource students involved in the study.

Assessments

The Brigance® Diagnostic Inventory of Basic Skills The pretest and posttest for the study included subtests in the Brigance® Diagnostic Comprehensive Inventory of Basic Skills. It assesses "203 skill sequences in the areas of readiness, reading, listening, research and study skills, spelling, language and math" (Brigance, 1983). These nine subtests were given to all the subjects of the study as pretests and posttests: Identifies Initial Consonants in Spoken Words (21 items), Pronounces Written Initial Consonants (21 items), Substitutes Initial Consonant Sound (21 items), Substitutes Short Vowel Sounds (20 items), Substitutes Long Vowel Sounds (20 items), Identifies Final Consonants in Spoken Words (18 items), Substitutes Final Consonant Sounds (18 items), Pronounces Written Initial Blends and Digraphs (30 items), and Substitutes Initial Blend and Digraph Sounds (31 items).

The Yopp-Singer Test of Phoneme Segmentation The Yopp-Singer Test of Phoneme Segmentation was the second assessment for this study. It is a powerful but easy to administer five to ten minute test with twenty-two items. The assessor says a one-syllable word and asks the student to break it apart, giving each sound in order. For example the teacher gives the word "old" and the student responds with the sounds /o/-/l/-/d/. According to Yopp:

> Students who obtain high scores (segmenting all or nearly all of the items correctly) may be considered phonemically aware. Students who correctly segment some items will be displaying emerging phonemic awareness. Students who are able to segment only a few items or none at all lack appropriate levels of phonemic awareness (Yopp, 1995, p. 23).

Random Selection Process and Timeline for the Study

The study took place in the Resource classroom over a period of eight weeks from mid-October to mid-December. Pre-tests were given from mid-August to mid-October. Post-tests were given from mid-December to mid-January. After the pre-test scores were obtained, the groups were divided into equal groups as far as numbers and ability levels through random drawing of names from a hat. Each drawing was from among children of approximately equal levels of ability. Four drawings were held, a drawing for each grade level, 2-5. The control group had two second graders, six third graders, six fourth graders, and one fifth grader, for a total of fifteen students (5 girls and 10 boys). The treatment group had three second graders, five third graders, seven fourth graders, and one fifth grader, for a total of sixteen students (5 girls and 11 boys). The average IQ for the control group was 91.2. The average IQ for the treatment group was 94.375. The average discrepancy between ability (IQ) and the lowest achievement score used to determine learning disability in the control group was 24.33 points. The average discrepancy between ability (IQ) and the lowest achievement score used to determine learning disability in the treatment group was 25.428

points. Three control students and two treatment students were not included in the discrepancy averages since they were language impaired, mentally retarded, or autistic and we had incomplete achievement test scores for them.

The Study

After the control group and the experimental group members were determined, both groups received training in the Herman Method for Reversing Reading Failure and/or Phonological Awareness Activities, journal writing and free reading time for individual, paired, or small group reading of varied literature or read-alouds by the teacher or teaching assistant. While the treatment group spent additionally an average of ten minutes a day on the computer software program, Phonics, by the Davidson Company, the control group did other supplemental reading activities such as reading/language games (Sound It Out, Concentration, Plunk's Pond), phonics workbook activities or free reading or listening to a book on tape.

When the experiment was over both groups had the opportunity to choose between computer software activities and reading and language games, with the control group being given first opportunity to use the computer software.

Evaluation of the Study

A t-test was used to compare the pretest and posttest scores to compare gains made by the control group versus gains by the experimental treatment group in reading and phonological/phonemic awareness skills as measured by the Brigance® and the Yopp-Singer Test of Phoneme Segmentation.

Chapter 4

RESULTS

Analysis of Data

At the end of the study a t-test was conducted to compare the posttest scores of the control group with the posttest scores of the treatment group. The mean scores for both groups showed a difference of 5.56 points between the two groups (see Table 1).

TABLE 1

POSTTEST MEANS SCORES BY CONTROL AND TREATMENT GROUPS TO COMPARE PHONOLOGICAL AWARENESS SKILLS IMPROVEMENT

Groups	N (No. of Students)	Mean Score	Mean Difference	Std. Error Mean Difference	t ratio	Sig. 2-tailed
Control	15	169.93	5.56	16.13	.345	*.733
Treatment	16	164.38				

*Not Significant

No statistical significance was found in these results. The research therefore showed no effect on phonological awareness improvement as a result of using the Davidson Company Phonics computer software program than the improvement from using other supplemental reading activities.

Acceptance or Rejection of the Hypothesis

The data of this study found no statistically significant difference in phonological awareness skills improvement between Resource students in an elementary school setting who received phonological awareness training in the Herman Method for Reversing Reading Failure and/or the Phonological Awareness Book along with other reading activities

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and students who received this same training supplemented with the Davidson Phonics computer software program. The null hypothesis for this study stated that students receiving instruction with the Herman Method for Reversing Reading Failure and the Phonological Awareness Book activities combined with Davidson Company Phonics computer software would have no significant increase (at the .05 level of significance) in word analysis and phoneme segmentation skills over students receiving instruction only with the Herman Method and the Phonological Awareness Book activities. This hypothesis was retained at the .05 level of significance.

Chapter Five

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary of the Research Study

A group of thirty-one second, third, fourth, and fifth grade students receiving Resource services in an elementary school setting took part in this study to compare the effects of phonological awareness instruction using the Herman Method for Reversing Reading Failure and/or the Phonological Awareness Book along with other reading programs and activities with and without the computer software program Phonics by Davidson Company. The students were each given pretests at the beginning of the study and the same tests were used as posttests at the end of the study to measure improvement gains in word analysis and phoneme segmentation skills. Since all ten tests given assessed an aspect of reading or phonological awareness, the scores from the nine Brigance® subtests and the Yopp-Singer test were combined to find a mean score for all pretests and posttests in both the control and treatment groups and then a mean score of the points improved between the pretest and the posttest in order to compare improvement between the control and the treatment groups. There were 200 test items in the Brigance® subtests and 22 test items on the Yopp-Singer test for a total of 222 test items.

The results of this study showed there was no statistically significant difference between the improvement gains in the control group that was taught with the Herman Method and/or the Phonological Awareness Book and other reading and phonological awareness programs and activities and in the treatment group that was taught with these same reading activities supplemented with the Davidson Company Phonics computer

software program. The control group made slightly greater gains but they were not statistically significant.

Conclusions

All the students involved in the study made amazing gains in their scores on the nine Brigance® Diagnostic Comprehensive Inventory of Basic Skills "Word Analysis" subtests and the Yopp-Singer Test of Phoneme Segmentation from pretest to posttest after instruction in the Herman Method for Reversing Reading Failure and/or the Phonological Awareness Book along with other reading programs and activities. The control group had an average score of 117.40 on the pretest that improved to a mean score of 169.93 on the posttest (out of a total of 222 test items). From pretest to posttest the students in the control group showed an average gain of 52.53 points (see Table 2).

TABLE 2

COMPARISON OF CONTROL GROUP PRETEST AND POSTTEST SCORES TO SHOW PHONOLOGICAL AWARENESS IMPROVEMENT

Tests	N	Mean	Mean Difference	Std. Error Mean Difference	t ratio	Sig. 2-tailed
Control Pretest	15	117.40	52.53	5.40	9.731	*.000
Control Posttest	15	169.93				

*Highly Significant

The treatment group started the study with an average pretest score of 115.13 that improved to a mean score of 164.38 on the posttest (out of a total of 222 test items) with an average improvement of 49.25 points from pretest to posttest (see Table 3).

TABLE 3

COMPARISON OF TREATMENT GROUP PRETEST AND POSTTEST SCORES TO SHOW PHONOLOGICAL AWARENESS IMPROVEMENT

Tests	N	Mean	Mean Difference	Std. Error Mean Difference	t ratio	Sig.(2-tailed)
Treatment Pretest	16	115.13	49.25	4.31	11.436	*.000
Treatment Posttest	16	164.38				

*Highly Significant

The gains made by both the control group (a mean of 52.53 point gain) and the gains made by the treatment group (a mean of 49.25 point gain) were highly significant statistically. The students made significant gains almost equally in both the control and the treatment groups. Therefore the instruction each group received was found to be highly effective. However, the treatment group that received supplementation with the Davidson Company Phonics computer software program showed no greater improvement than the control group without the Phonics program. Both groups made the largest gains in these three Brigance® "Word Analysis" subtests: Substitutes Long Vowel Sounds, Pronounces Written Initial Blends and Digraphs, and Substitutes Initial Blend and Digraph Sounds. These were skills that some students at the beginning of the study were completely unable to do, so there was the most potential for growth there. The control group made slightly greater improvements overall, but they were not statistically significant. There are several possible explanations for the control group doing slightly better than the treatment group. While the treatment group was using the Phonics program, the control group was participating in a variety of activities, sometimes involving small group or one-to-one instruction with the

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teacher, teacher assistant or a peer or older student. The teacher was able to give extra attention to those students not using computer software, while those students using the computers in the classroom for the most part were working independently, often with a peer but not usually with much teacher or teacher assistant help. Thus, the fact that the treatment group using computer software made almost equal improvement as the control group receiving teacher assistance speaks well for the Davidson Company Phonics computer software program. Other possible explanations for differences in scores may be the subtle and complex differences in motivation, behavior, family environment, and other influences in the lives of Special Education students that may positively or negatively impact school performance. While the results did not show statistical significance, other benefits somewhat more difficult to measure were noticed for the students using the Phonics software. Most students enjoyed using the program as evidenced by their smiles and laughing. They frequently asked to use it even when not scheduled to do so. They seemed to enjoy learning from the computer much more than from other reading activities used in the study. At the conclusion of the study, all students in the control group were also allowed to use the Phonics software.

Recommendations

The researcher recommends that all students have access to phonics computer software in the classroom. The computer software was found to be very motivational to the students using the program and seemed to be appropriate for many different learning styles and ability levels from prereaders to older students who appear to just have a few gaps in their phonemic awareness skills. The researcher also recommends that further research be conducted with regular education as well as special education students to see if these results

are replicated. The researcher believes these same or similar benefits would be seen with regular education students as well. The fact that the group using the Phonics software did almost equally well as students receiving other forms of supplemental reading instruction shows promise for giving teachers extra time to work with some students while others are receiving instruction working independently on the computer. The Phonics software appeared to benefit lower achieving students who generally require more intensive instruction just as well as it benefited higher achieving students. The researcher was very pleased with the improvement shown in phonological awareness skills by all Resource students taking part in the study and plans to continue the instruction with the addition of the Phonics software for all Resource students needing phonological awareness training. These results will be shared with other teachers in this school to show the benefits of computer instruction in conjunction with phonological awareness training.

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SOFTWARE

Phonics (Computer Software). The Davidson Company.

APPENDICES

Permission to Participate in a Study

I give permission for my child, _____ to participate in a research study conducted by Pam S. Blanchard to investigate the effects of phonics computer software on phonemic awareness in children. I understand that my child will not be identified in the research paper in any way. I understand that my child may or may not be using the software as part of the study, but if the software proves to be beneficial, he or she will have access to it when the study is completed.

_____ _____

Parent/Guardian Signature Date

KNOX COUNTY SCHOOLS
ANDREW JOHNSON BUILDING

Dr. Charles Q. Lindsey, Superintendent

September 29, 1999

Ms. Pam S. Blanchard
705 Forest View Court
Seymour, Tennessee 37865

Dear Ms. Blanchard:

You are granted permission to contact appropriate building-level administrators concerning the conduct of your proposed research study entitled, "Phonological Awareness Instruction to Prevent Reading Failure: A Study of the Benefits of Commercially Produced Phonics Software to Phonological Awareness Instruction." In the Knox County schools final approval of any research study is contingent upon acceptance by the principal(s) at the site(s) where the study will be conducted.

In all research studies names of individuals, groups, or schools may not appear in the text of the study unless *specific* permission has been granted through this office. The principal researcher is required to furnish this office with one copy of the completed research document.

Good luck with your study. Do not hesitate to contact me if you need further assistance or clarification.

Yours truly,

Samuel E. Bratton, Jr.

Samuel E. Bratton, Jr., Ed.D.
Coordinator of Research and Evaluation
Phone: (423) 594-1740
Fax: (423) 594-1709

Project No. 004

P.O. Box 2188 • 912 South Gay Street • Knoxville, Tennessee 37901-2188 • Telephone (423) 594-1800

Knox County Schools

Permission to Conduct Research

September 29, 1999

TO: Mr. C. Richard Privette, Principal, Carter Elementary School

Subject of Research: Phonics
Name of Researcher: Ms. Pam S. Blanchard
Position: Graduate student, JBC and Knox County resource specialist
Supervisor/Associate (if applicable): Dr. Charles Syester

Ms. Pam S. Blanchard has received permission to contact you concerning her research study entitled, "Phonological Awareness Instruction to Prevent Reading Failure: A Study of the Benefits of Commercialy Produced Phonics Software to Phonological Awareness Instruction." Although this study has been approved at the central office level, it is our policy to allow the building-level administrator the right to accept or reject a given research project for his/her school or administrative unit. If you have questions or concerns about this project, telephone me at 594-1740. Thank you for your careful consideration of this study.

Samuel E. Bratton, Jr.

Samuel E. Bratton, Jr.
Coordinator of Research and Evaluation

Project No. 004

xc: Ms. LaNoka O. Rhodes, Coordinator of Elementary Schools
Ms. Pam S. Blanchard

Groups	Pretest Scores	Posttest Scores	Mean Differences (Gains)
Control Group	117.40	169.93	52.53
Treatment Group	115.13	164.38	49.25

FIGURE1

COMPARISON OF PRETEST AND POSTTEST SCORES IN CONTROL AND TREATMENT GROUPS TO SHOW GAINS FROM PHONOLOGICAL AWARENESS INSTRUCTION

All Tests for Both Groups	Mean Scores	Mean Difference from Pretest to Posstest
All Pretests	116.23	50.83
All Posttests	167.06	

FIGURE 2

COMPARISON OF ALL PRETEST AND POSTTEST MEAN SCORES COMBINED TO SHOW GAINS FROM PHONOLOGICAL AWARENESS INSTRUCTION

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